Anti-CD133 Monoclonal Antibodies as Cancer Therapeutics

Summary (1024-character limit)

Researchers at NCI developed a rabbit monoclonal antibody that recognizes the marker for CD133 and is useful in pharmacodynamic testing to inform targeted anti-cancer chemotherapy development and clinical monitoring. CD133 is a cell surface glycoprotein used as a marker and expressed in stem cells such as hematopoietic stem cells, endothelial progenitor cells and neural stem cells. The NCI seeks collaborative co-development or licensing partners for this technology.

NIH Reference Number

E-025-2015

Product Type

- Diagnostics
- Therapeutics

Keywords

- Rabbit Monoclonal Antibodies, Anti-CD133, Biomarker, Cancer, Immunology, Screening, Diagnostic Tool

Collaboration Opportunity

This invention is available for licensing and co-development.

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Description of Technology

Most early work on CD133 was carried out using one of two monoclonal antibodies (mAbs), AC133 and AC141, which recognize an undefined glycosylated epitope of CD 133.

Researchers from NCI's Pharmacodynamic Assay Development and Implementation Section generated novel anti-human CD133 monoclonal antibodies from large extracellular domain loops of CD133 using peptide residues selected from the native extracellular domains of CD133 protein as an immunogen. They selected sequences for immunization that do not overlap with known glycosylation sites. Peptide antigens comprising the amino acids in the extracellular domain were synthesized and conjugated to carrier proteins as the immunogen. A key step was screening for specificity using peptides and expressed

recombinant extracellular domains of CD133. The resulting antibodies recognize both glycosylated and non-glycosylated regions of the cognate antigen. The inventors have demonstrated the utility of this invention in immunofluorescence assay, western blotting and ELISA, flow cytometry, and immunoprecipitation. NCI seeks licensing and/or co-development research collaborations for commercializing the use of antibodies against CD-1333.

Potential Commercial Applications

- Biomarker to CD133 useful for immunofluorescence assay
- Western blot
- ELISA
- Flow cytometry
- Immunoprecipitation

Competitive Advantages

- High specificity anti-CD133 monoclonal antibody that has the ability to bind to both glycosylated and unglycosylated epitope of CD133

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Development Stage

- Discovery (Lead Identification)

Patent Status

- **U.S. Patent Filed:** U.S. Patent Application Number PCT/US2016/024531, Filed 28 Mar 2016

Therapeutic Area

- Cancer/Neoplasm
- Immune System and Inflammation